



## GIS Analysis Supporting Nutrient and Sediment Investigations

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**Principle Investigator(s):**  
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**Collaborators:** Chesapeake Bay Program (over 25 Federal Agencies, 6 States, the District of Columbia, and numerous local customers and partners)

**Statement of Problem:** The Chesapeake Bay, the Nation's largest estuary, has been degraded due to water-quality problems, loss of habitat and over-harvesting of living resources. The Chesapeake Bay Program (CBP), a multi-agency partnership with the Department of Interior (DOI), completed Chesapeake 2000, a new agreement that revises and establishes restoration goals for the next 10 years in the Bay and its watershed. To support the expanded technical needs of Chesapeake 2000, the USGS has the critical role to provide unbiased scientific information that is utilized to help understand and restore the Bay and its watershed.

The overall objective of the USGS Chesapeake Bay Studies is to provide resource managers with the critical scientific information necessary to understand the complex relation between human-induced influences (population growth, land- use change, and restoration efforts) and natural controls (climate variability and environmental framework) on water quality, vital habitats, and living resources in the Bay and its watershed. The primary science topics to be addressed are:

- a. Enhanced land cover, watershed data, and data delivery
- b. Sediment, water clarity and submerged aquatic vegetation
- c. Prediction, monitoring, and understanding of nutrients and contaminants
- d. Factors affecting the health of fish, wildlife and their habitats

**Objectives:** The objective is to provide spatial information and analysis related to the distribution and delivery of nutrients and sediment to the Chesapeake Bay. This objective is

carried out through coordination with multiple USGS programs and investigations as well as state and local resource managers.

**Approach:** GIS will be used to further evaluate information and techniques related to nutrient and sediment transport models using the SPARROW approach. GIS will also be used to evaluate and compile spatial information related to a non-tidal monitoring network and the factors that affect trends in nutrients and sediment. Spatial data will also be communicated and distributed to appropriate committees developing nutrient and sediment management plans in the Chesapeake Bay watershed.

**Selected Reports and Other Products:**

Database, Planned: John Brakebill, A database of watershed characteristics from selected monitoring locations, USGS, Digital Data Series

**Relevance and Benefits:** Geographic Information Systems (GIS) are a valuable tool used to provide spatial information and analysis related to Chesapeake Bay science topics.